

Claims:

1. A portable beverage preparation device comprising:
  - a drink container containing a predetermined volume of a potable base liquid;
  - at least one beverage preparation of a predetermined quantity;
  - at least one sealed compartment for confining said beverage preparation; and
  - a dispenser means for introducing said at least one beverage preparation into said base liquid within said drink container;

wherein said drink container and said at least one sealed compartment are in close physical proximity to each other and separated by at least one thin membrane which, when inwardly perforated by said dispenser means, introduces said at least one beverage preparation into said base liquid.
2. The portable beverage preparation device of claim 1 wherein said potable base liquid and said at least one beverage preparation are isolated from one another until preparation of a selected drink.
3. The portable beverage preparation device of claim 1 wherein said at least one sealed compartment is isolated from said container at the common surface between said container and said at least one sealed compartment, said isolation being provided by at least two welded rings sufficiently spaced apart to prevent said base liquid from seeping into said beverage preparation.
4. The portable beverage preparation device of claim 1 wherein said drink container comprises a cup.
5. The portable beverage preparation device of claim 4 wherein said cup is provided with a sealed cover welded thereon by an attachment means, said cup unit containing said potable base liquid and said at least one beverage preparation needed to prepare a selected drink.
6. The portable beverage preparation device of claim 5 wherein said sealed cover is configured with at least at least two utility openings covered with removable small covers comprising:
  - a first opening for extracting a beverage drink from said cup unit; and
  - at least a second opening for processing the beverage drink.

7. The portable beverage preparation device of claim 6 wherein said at least a second opening provides for venting of said base liquid.
8. The portable beverage preparation device of claim 6 wherein said removable small covers are applied to said utility openings to seal any waste materials inside said cup after use.
9. The portable beverage preparation device of claim 5 wherein said attachment means comprises a friction fit.
10. The portable beverage preparation device of claim 5 wherein said attachment means comprises a non-separable bonded seal.
11. The portable beverage preparation device of claim 1 wherein said drink container comprises a bottle.
12. The portable beverage preparation device of claim 11 wherein said bottle is a baby bottle.
13. The portable beverage preparation device of claim 11 wherein said bottle is a medicine bottle configured with a sealed cap.
14. The portable beverage preparation device of claim 1 wherein said base liquid comprises treated water.
15. The portable beverage preparation device of claim 1 wherein said sealed chamber comprises at least one compressible pocket.
16. The portable beverage preparation device of claim 1 wherein said at least one beverage preparation is selected from the groups of edible materials including: coffee, tea, cocoa; powders, grounds, and flakes; dried fruits, dried vegetables; fruit juice, vegetable juice; milk and milk-substitute powders; syrups, sweeteners, flavorings; emulsions, solutions, extracts; dried herbs, medicines; liquid concentrates, liquid condensates, and any combination selected from said group of edible materials.

17. The portable beverage preparation device of claim 1 wherein said thin membrane comprises one of: a metallic foil and a perforatable plastic material.
18. The portable beverage preparation device of claim 1 wherein said dispenser means comprises a punching element for perforating said thin membrane.
19. The portable beverage preparation device of claim 1 wherein said dispenser means comprises a piston for effecting the dispersion of said at least one beverage preparation.
20. The portable beverage preparation device of claim 19 wherein said piston comprises a fixed arm and a moveable arm disposed within said container for effecting dispersion of said beverage ingredients confined within said at least one sealed compartment when pressure is applied by a user to the pressure point extremes of said fixed and moveable arm.
21. The portable beverage preparation device of claim 1 wherein said dispenser means comprises water pressure.
22. The portable beverage preparation device of claim 1 wherein said dispenser means comprises at least one compressible compartment.
23. The portable beverage preparation device of claim 22 wherein said at least one compressible compartment is provided with said dispersion means to disperse said beverage preparation contained therein inwardly through said at least one thin membrane into said container.
24. The portable beverage preparation device of claim 22 wherein said at least one compressible compartment is an accordion-like protrusion disposed on the external surface of said container and oriented with a common surface between said accordion-like protrusion and said container.
25. The beverage preparation device of claim 22 wherein said at least one compressible compartment is a dome-like protrusion disposed on the external surface of said container oriented with a common surface between said dome-like protrusion and said container.

26. The portable beverage preparation device of claims 24 and 25 wherein said common surface comprises said at least one thin membrane.
27. The portable beverage preparation device of claim 1 further comprising:  
a portable heating device configured to be attached to said container for providing heating of said beverage drink on demand.
28. The portable beverage preparation device of claim 27 wherein said portable heating device comprises a heating element, including heating coils, configured for direct insertion into said base liquid in said container.
29. The portable beverage preparation device of claim 27 wherein said portable heating device comprises a solid-state heat pump that utilizes the Peltier effect for either of heating and cooling said beverage drink.
30. The portable beverage preparation device of claim 27 wherein said portable heating device comprises:  
a pump unit;  
a controller for operating said pump unit; and  
a heating/cooling element,  
wherein said pump unit is configured with an impeller for drawing said base liquid from said container into a heating chamber in said portable heating device and said heating/cooling element heats/cools said base liquid in said chamber prior to the return of said base liquid to said container utilizing one of said pump unit and gravity, both said pump unit and said heating/cooling element being in connection with said controller and a power source.
31. The portable beverage preparation device of claim 30 wherein said controller continues to cause water to flow in contact with a surface of said heating/cooling element in a closed cycle until a user-desired temperature of said base liquid is reached.
32. The portable beverage preparation device of claim 31 wherein said base liquid is made to flow on one surface of said heating/cooling element for cooling, and on the other face for heating.

33. The portable beverage preparation device of claim 30 wherein the same face of the heating/cooling element upon which said base liquid is made to flow can be electrically switched to reverse the polarity of said heating/cooling element thus switching said beverage preparation device from a heating mode to a cooling mode and visa versa.

34. The portable beverage preparation device of claim 1 further comprising:  
a heater unit for heating said potable base liquid, including a heating element; and  
a brewing element, including said at least one beverage preparation confined therein in at least one pocket thereof for admitting said base liquid therethrough.

35. The portable beverage preparation device of claim 34 wherein said heating element is configured for fitting within a cup unit.

36. The portable beverage preparation device of claim 35 wherein said cup unit is provided with a predetermined volume of said potable base liquid and includes an inner lid and an outer cover, wherein both said inner lid and said outer cover are removable for insertion of user-selected said brewer element.

37. The portable beverage preparation device of claim 36 wherein said cup unit provided with said user-selected said brewer element is made ready to drink by shaking.

38. The portable beverage preparation device of claim 34 wherein said heating element includes:

a holding chamber for accommodating at least a portion of said base liquid;  
at least one heat-activated valve for controlling the flow of said base fluid through said heating element;  
a heater rod extending into said holding chamber; and  
a tube in communication with said holding chamber and said drink container,  
wherein said heater element, when fitted within said drink container and activated, operates said heater rod to heat said at least a portion of said potable base liquid to at least boiling within said holding chamber, and

wherein said holding chamber retains said potable base liquid by activation of said at least one heat-activated valve to produce pressure in said holding chamber for pushing said heated potable base liquid through said tube.

39. The portable beverage preparation device of claim 38 wherein said heat-activated valve includes a bimetal strip.

40. The portable beverage preparation device of claim 34 wherein said heater unit comprises:

- a switch for activating and deactivating said heating element;
- a controller for controlling the operation of said heating element; and
- a power unit for providing power to said heating element,

wherein said switch, said controller, and said power unit are in communication with one another and with a power source.

41. The portable beverage preparation device of claim 35 wherein said cup unit includes an inner cup nested in an outer cup, said inner cup spaced apart from said outer cup so as to define a chamber for holding said base liquid therebetween, and wherein said outer cup is in communication with said chamber of said brewing element for receiving said base liquid that has passed therethrough.

42. The portable beverage preparation device of claim 41 wherein said inner cup is separable from said outer cup.

43. A portable beverage preparation system comprising:

- a cup unit including an inner cup and an outer cup, said inner cup spaced apart from said outer cup so as to define a chamber for holding a potable base liquid therebetween;
  - a heater unit for heating said potable base liquid; and
  - a brewing element configured for fitting on said inner cup,
- wherein said brewing element is configured with at least one pocket for holding at least one beverage preparation and configured for the passage of said base liquid therethrough, and including an outlet proximate to the periphery of said inner cup.

44. The portable beverage preparation system of claim 43 wherein said cup unit is provided with a cover with attachment means for connecting said cover to said cup unit.

45. The portable beverage preparation system of claim 43 wherein said outer cup and said heater unit are provided with interconnecting lip segments for a bayonet-type rotatable connection.

46. The beverage preparation system of claim 43, wherein said outer cup is provided with external isolation ribs.

47. The portable beverage preparation system of claim 43 wherein said heater unit comprises:

- a heating element configured for fitting within said cup unit;
- a switch for activating and deactivating said heating element;
- a controller for controlling the operation of said heating element; and
- a power unit for providing power to said heating element,

wherein said heating element, said switch, said controller, and said power unit are in communication with one another and with a power source via a plug.

48. The portable beverage preparation system of claim 43 wherein said heater unit is configured to engage said outer cup in a releasable engagement.

49. The portable beverage preparation system of claim 47 wherein said heating element includes:

- a holding chamber for accommodating at least a portion of said base liquid;
  - at least one heat-activated valve for sealing said holding chamber to confine said at least a portion of said potable base liquid in said holding chamber;
  - a heater rod extending into said holding chamber; and
  - a tube in communication with said holding chamber and said drink container,
- wherein said heater element, when fitted within said drink container and activated, operates said heater rod to heat said at least a portion of said potable base liquid to at least boiling within said holding chamber, and
- wherein said holding chamber retains said potable base liquid by activation of said at least one heat-activated valve to produce pressure in said holding chamber for pushing said heated potable base liquid through said tube.

50. The portable beverage preparation system of claim 47 wherein said heating element is configured for fitting within a cup unit.

51. The portable beverage preparation system of claim 47 wherein said heating element further includes a heater coil and a sensor in communication with said heater coil, said sensor configured for detecting resistance in said heater coil for temperature sensing.

52. The portable beverage preparation system of claim 47, wherein said controller is configured for controlling said heater rod by analyzing a rise in temperature versus time.

53. The portable beverage preparation system of claim 47 wherein said controller shuts off power to said heater rod when any of the following conditions prevail:

- a predetermined temperature is reached;
- an outlet is blocked;
- a used cup is detected; and
- the system lacks a predetermined volume of water.

54. The portable beverage preparation system of claim 47 wherein said plug is adapted for use in an automobile cigarette lighter socket.

55. The portable beverage preparation system of claim 47 wherein said plug is adapted for use in a conventional electrical outlet.

56. The portable beverage preparation system of claim 49, wherein said at least one heat-activated valve includes a bimetal strip.

57. The beverage preparation system of claim 49, wherein said at least one heat-activated valve includes a vent for providing venting from said holding chamber.

58. The portable beverage preparation system of claim 43, wherein said inner cup includes said potable base liquid in a predetermined amount.

59. A portable beverage brewing system comprising:

- a cup unit including an inner cup and an outer cup, said outer cup separable from

said inner cup; and

a brewing element configured for fitting on said inner cup, said brewing element configured for holding at least one beverage preparation and configured for the passage of a potable base liquid therethrough, and including an outlet proximate to the periphery of the inner cup.

60. The portable beverage preparation system of claim 59, wherein said outer cup envelopes said inner cup, being in communication with said pocket of said brewing element for receiving said base liquid that has passed therethrough.

61. The beverage preparation system of claim 59, wherein said at least one beverage preparation is coffee.

62. The beverage preparation system of claim 59, wherein said at least one beverage preparation is espresso.

63. The beverage preparation system of claim 59, wherein said at least one beverage preparation is provided in a predetermined volume in pre-packaged form.

64. The beverage preparation system of claim 59, wherein said brewing element is removably insertable.

65. The beverage preparation system of claim 59, wherein said brewing element further comprises at least two concentric rings, for storage of at least two types of beverage preparations.

66. The beverage preparation system of claim 59, wherein said brewing element has a spiral configuration, said liquid entering said spiral at an inner edge thereof and exiting at an outer edge there of, said outer edge communicating with said second cup.

67. The beverage preparation system of claim 66, wherein said spiral configuration has at least two beverage preparation areas arranged sequentially in the spiral, such that said liquid enters said spiral at said inner edge and passes through said first beverage preparation area

and continues to pass through said spiral through a second beverage preparation area and exits through said outer edge communicating with said second cup.

68. The beverage preparation system of claim 59, wherein said heater element further comprises legs for support thereof.

69. The beverage preparation system of claim 59, wherein said brewing element is provided with at least one bore.

70. A beverage preparation system comprising:

a cup including an inner cup and an outer cup, said inner cup spaced apart from the outer cup so as to define a chamber for holding potable base liquid therebetween; and  
a brewing element configured for fitting on the inner cup, said brewing element configured for holding at least one beverage preparation and configured for the passage of said base liquid therethrough.

71. The beverage preparation system of claim 70, wherein said inner cup includes said base liquid in a predetermined volume.

72 A beverage preparation system comprising:

a cup unit including an inner cup contained a predetermined volume of potable base liquid, and an outer cup, said outer cup separable from said inner cup; and  
a brewing element configured for fitting on said inner cup, said brewing element configured for holding at least one beverage preparation and configured for the passage of said base liquid therethrough, and including an outlet proximate to the periphery of said inner cup.

73. The beverage preparation system of claim 72, wherein said inner cup includes said base liquid in a predetermined amount.

74. A method for preparing a beverage drink comprising:

providing a drink container containing a predetermined volume of a potable base liquid;

providing at least one sealed chamber containing a predetermined quantity of at least one beverage preparation;

providing a dispenser means for introducing said at least one beverage preparation into said potable base liquid;

wherein said drink container and said at least one sealed chamber are in close physical proximity to each other and separated by at least one thin membrane which, when inwardly perforated by said dispenser means, introduces said at least one beverage preparation into said potable base liquid;

selecting at least one of said at least one beverage preparation from said at least one sealed chamber;

applying pressure to at least one pressure point to activate said dispenser means;

perforating said at least one thin membrane;

releasing said at least one beverage preparation from said at least one sealed chamber into said potable base liquid; and

mixing said at least one beverage preparation with said potable base liquid.

75. The method for preparing a beverage drink as in claim 74 further comprising:

heating said potable base liquid; and

flushing said at least one beverage preparation from said at least one sealed chamber into said base liquid by one of pressure action and sprinkler means.

76. The method for preparing a beverage drink as in claim 74 wherein said potable base liquid is treated water.

77. The method for preparing a brewed beverage drink of claim 74, wherein said predetermined volume of said base liquid is approximately 15 milliliters (ml).

78. A method for preparing a brewed beverage drink comprising:

a) providing at least one beverage preparation;

b) providing a brewing element, including a holding chamber for confining said at least one beverage preparation therein;

c) continuously heating predetermined quantities of liquid to at least boiling; and

- d) pressurizing said heated liquid to force it into and out of said at least one beverage preparation confined within said holding chamber.
79. The method for preparing a brewed beverage drink of claim 78, additionally comprising:  
d) repeating steps b) and c).